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Authorship

DCL conceived of the study, drafted initial designs, coordinated the pre-registration and manuscript preparation, and contributed to drafting the pre-registration and manuscript. Both MJB and LAK revised the study design, developed statistical analysis plans, analyzed data, and contributed to drafting the pre-registration and manuscript. All authors read and approved the final pre-registration and manuscript.

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Abstract

The 2016 U.S. presidential election was marked by hostile political discourse, often on social media, where users were exposed to divergent, and potentially distressing, political discourse. This research explores the effects of this election on the well-being of emerging adults, who receive the majority of their news via social media. Using data from the Emerging Adulthood Measured at Multiple Institutions 2 study, we expected greater social media use to be associated with greater perceived stress, and lower well-being, among emerging adults who are more politically extreme, and expected these relationships would be moderated by social support and social media use. Our pre-registered analysis did not support our hypotheses. Although there were some effects of extremity on stress and well-being, overall the direction of the effects were inconsistent and neither social media use nor social support was found to moderate the effects of extremity on stress and well-being.

Political Extremity, Social Media Use, Social Support, and Well-being for Emerging Adults During the 2016 Presidential Election Campaign

The 2016 U.S. presidential election was described by news media as the most divisive, hostile, and "nastiest" election in living memory (Cummins, 2016, February 17; Shafer, 2016, September 14; The Ann Magazine, 2016, November). Watching politicians and pundits battling it out on the campaign trail, voters in emerging adulthood were getting a strong taste of partisan politics. Political attitudes begin to develop and crystalize during emerging adulthood (e.g., Hatemi et al., 2009), which means that the potential impact of major events on political opinions is at its highest during this sensitive period (e.g., Markus, 1979; Sears & Valentino, 1997). Some of this divisive rhetoric was driven by misleading Facebook advertisements that were purchased by domestic and Russian groups to exploit issues of race, immigration, and nationalism, and which used misinformation designed to stir negative emotions (Kim et al., 2018). Because the Internet is the most common source of news for young adults (Baumgartner & Morris, 2010; Pew Research Center, 2016a; The Associated Press, The NORC Institute, & American Press Institute, 2015), emerging adults were especially likely to be affected by divergent election discourse through social media. In the present research, we explore how the health and well-being of emerging adults was affected during the election by using data collected as part of the Emerging Adulthood Measured at Multiple Institutions 2 (EAMMi2) project. We specifically proposed that those emerging adults who use more social media and are more politically extreme might suffer negative consequences to their health and well-being, and that these effects might be moderated by social support.

Using social media can expose people to political ideas and opinions that they might not otherwise experience because of "inadvertency," which proposes that even when people do not

seek out dissimilar ideas, they may be exposed to them serendipitously (Brundidge, 2010, p. 687). In contrast to direct (face-to-face) interpersonal political discussions where similarity of views is more likely, political discussion on social media is associated with greater cross-cutting (i.e. heterogenous) political discourse[1], even among those in users' "friend" networks (Goel, Mason, & Watts, 2010; Kim, 2011; Mutz & Mondak, 2006; The Associated Press, The NORC Institute, & American Press Institute, 2015; Yang, Barnidge, & Rojas, 2017).

Users of social media were more likely to report that the election was a source of stress, compared to non-social media users (54% vs. 45% respectively), and 38% of survey respondents reported discussions on social media were a source of stress (American Psychological Association, 2016). Furthermore, exposure to divisive rhetoric may have served as a source of chronic stress, as 37% of social media users reported feeling "worn out" by the amount of political content encountered in their social media feeds—a feeling shared equally by Democratic and Republican users (Pew Research Center, 2016b, p. 10).

Stress is known to affect both physical and psychological well-being. Both acute and chronic stress are positively correlated with somatic symptoms and responses (see e.g., Aanes, Mittelmark, & Hetland, 2010; Cacioppo et al., 1998; Delongis, Folkman, and Lazarus, 1988). Generally speaking, stressful experiences trigger a cascade of responses including cortisol release, which is linked to impaired immune function and associated somatic effects including viral infection (Stone et al., 1992). Stress is known to positively correlate with depression (Cohen, Karmarck, & Mermelstein, 1983) and both state and trait anxiety (e.g., Swami et al.,

[1] A popular notion is that social media site algorithms restrict cross-cutting political information (Pariser, 2012).This is not supported by research on ideological segregation on social media (e.g., Flaxman, Goel, & Rao, 2016).

2016). Additionally, stress negatively correlates with subjective well-being in both adults (e.g., Ritchie, Sedikides, Wildschut, Arndt, & Gidron, 2011) and adolescents (e.g., Moksnes & Haugan, 2015). Thus, repeated exposure to the kind of contentious, cross-cutting political discourse provided by social media during the election may negatively impact both the physical and psychological well-being of its users.

One personal resource found to attenuate the harmful relationship between stress and health is social support. For example, because stress is thought to arise when personal resources are appraised as insufficient to manage a threat (Lazarus & Folkman, 1984), the belief that one can draw upon others for support may reduce stress by enhancing perceptions of available resources to cope with situational demands. Indeed, social support has been found to not only mitigate the effect of stress on psychological well-being (for a review, see Cohen & Wills, 1985), but also dampen physiological reactivity in the face of stressors (for reviews, see Lepore, 1998; Uchino, 2006). Therefore, higher levels of perceived social support should buffer against the negative impact of stress on health for heavy partisan users of social media during the 2016 election season.

Although many Americans do not follow politics closely (Galston, 2001), for those partisans who identify strongly with political parties and ideologies, what we refer to as "political extremity," hostile and divisive political discourse on social media may have been a particularly potent source of stress in the weeks and months leading up to the 2016 election. Previous research on Twitter usage prior to the 2010 midterm election showed that partisan users were likely to be exposed to cross-cutting interactions via mentions by users from opposing ideologies (Conover et al., 2011). In addition, many political messages were highly partisan, containing extreme and often disparaging content directed toward the opposition. For political

partisans that identify strongly with their political viewpoint, unexpected exposure to strongly opposing viewpoints may constitute a threat that could arouse a generalized stress response (Huddy, Mason, & Aarøe, 2015; Proulx, Inzlicht, & Harmon-Jones, 2012). Thus, emerging adults with high levels of political extremity and who are heavy users of social media may be especially vulnerable to the stress of a divisive and negative political environment, and that stress may in turn manifest as somatic symptoms and reduced well-being.

The Present Research

The present research set out to examine the relationships between strong political beliefs, social media use, stress, health, and social support among young adults. Based on the literature reviewed, we made three hypotheses:

H1: Political extremity would be associated with more stress and less well-being during the election campaign,

H2: that this relationship would be stronger for people engaged in social media, and

H3: that the effects of H1 and H2 would be attenuated by social support.

We test these three hypotheses by drawing on the EAMMi2 survey (https://osf.io/te54b; Grahe, et al., 2016). The EAMMi2 is a multi-institution study by investigators from 32 institutions and 4220 participants worldwide in the 11 months prior to, and 1 month after, the 2016 election. The study examined emerging adulthood (Arnett, 2000) and its relation to a variety of social and health variables. In the present research, we only focus on data from the United States and prior to Election Day because election results appear to affect partisans' well-being (Mandel & Omorogbe, 2014). We would expect that hypothesis H1 would be demonstrated through a main effect of political extremity, H2 would be demonstrated by a two-way interaction of political extremity with social media use, and H3 would be demonstrated by a three-way interaction of

political extremity, social media use, and social support. Our hypotheses are about the extremity of political beliefs (e.g., how strongly liberal or conservative a participant is), but others have also documented links between the direction of political beliefs (e.g., if a person is liberal or conservative) and some of our key dependent variables (e.g. Napier & Jost, 2008). Therefore, in all of our analyses we also control for the direction of participants' political beliefs, what we call "political ideology."

Method

Sampling and Participants

The EAMMi2 study was administered as an online self-report questionnaire to an international sample of 4220 participants from 32 institutions of higher education from April until June and September until December, 2016. The majority of data collection sites (29) were from the United States of America, with additional sites in England, Greece, and Greneda. Because the present research is concerned with the U.S. election, participants from data collection sites outside the United States were excluded from analysis.

Data collection sites were recruited by the EAMMi2 principal investigator in late 2015 and early 2016 via announcements on email listservs of the Society for the Study of Emerging Adulthood (SSEA), Society for Teaching Psychology (STP), and Council for Undergraduate Research (CUR); an announcement through a Psi Chi Digest newsletter; a call to Psi Beta Chapter Advisors; placement on The Many Lab project page on the Open Science Framework (OSF; https://osf.io/89vqh/); and posts on social media sites such as Facebook and Twitter. Further calls for contributors continued throughout the Spring of 2016 in face-to-face conversations and at appropriate locations in oral presentations at regional psychology conferences, the annual meeting of APS, and the CUR Biennial Research Conference. Target

contributors included emerging adulthood researchers, statistics/methods instructors, and Psi Chi or Psi Beta chapters or members. From July through October, 2016, advertisements continued through direct requests from contributors to likely participants.

Each data collection site was requested to obtain a sample of at least 80 participants, and the average attained sample size was 132. The target age group of the sampling was 18–29 years old. The sampling methods varied by institution, and included psychology department participant pools, email and social media solicitations, and public event and classroom solicitations (see https://osf.io/c58hj/ for a description of each site's sampling method). Participants received course credit, and/or an entry in a raffle for a chance to win a $25 USD Amazon gift card in exchange for participating[2].

The initial sample contained 4220 participants who started the survey. Participants were excluded from analysis if (a) their age was not between 18 and 29, (b) they demonstrated response bias (a single page of identical responses; see Meade & Craig, 2012), (c) they completed the survey in less than 10 minutes, (d) they failed an attention check item, (e) they had greater than 20% missing data values, (f) their response was on or after election day (November 9, 2016)[3], or (g) the data collection site was outside the United States. After these exclusions, the final sample size was 1704 including 1251 women (73.4%), 393 men (23.1%), 39 indicating "other", and 21 no response. For racial/ethnic group, 1139 (66.8%) indicated White/European-American, 112 (6.6%) Black/African-American, 129 (7.6%) Hispanic/Latino, 116 (6.8%)

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[2] Funding for the gift cards was provided by the project's Principal Investigator, through grants from the Pacific Lutheran University Regency Award and Association for Psychological Science Teaching Fund.

[3] For exploratory purposes, the analyses were conducted with all available data post-election day and the conclusions are nearly identical. See supplemental materials (https://osf.io/jbggz/) for these results.

Asian/Pacific Islander, 6 (0.4%) Native American/Indian American, 27 (1.6%) Other, 152 (8.9%) multiple race/ethnicities, and 23 no response. Participant ages ranged from 18 to 29 (M = 20.3, SD = 2.1)[4].

Survey Instrument

Following completion of informed consent, participants were directed (via a link specific to each collection site) to an online survey comprised of 175 items on 17 scales, along with 12 demographic items (the complete survey is available on the EAMMi2 OSF page: https://osf.io/cmsvw/). After the questionnaires, participants were asked for any comments, questions, or concerns, and then debriefed about the purpose of the study. If they were from a site offering entry into the Amazon raffle, participants were directed via a web link to the page for registration into the raffle. Because the questions of the present research were related to political ideology, social media use, stress, and health, a subset of the 17 scales administered as part of the EAMMi2 was used.

Measures

Predictors.

Political Extremity. The EAMMi2 included three questions asking about political views that we used to measure political extremity (our primary predictor variable) and political ideology (a covariate). The first question asked about the participant's self-labeled political orientation on a scale anchored by "Extremely Liberal" and "Extremely Conservative", with a midpoint of "Moderate, Middle of the Road", and an additional choice of "Don't Know/Haven't Thought About It." The second question asked how the participant would describe his or her

[4] Because of a survey construction error, age data was missing for 972 (56.1%) of the participants (after exclusions). Because a small percentage (3.9%) of the initial sample indicated age over 29, these 972 participants were included in the analysis.

party affiliation, anchored by "Strongly Democrat" and "Strongly Republican" with "Totally Independent" as its midpoint, and an additional option of "Apolitical/nonpolitical."[5]

The political extremity measure was created by first recoding the political orientation and party identification items such that the responses are zero for the middle of the scale (original score 4) ranging to 3 at the extremes ("Extremely Liberal/Strongly Democrat" and "Extremely Conservative/Strongly Republican"). For the measure of party affiliation, responses of "Don't know" or "Apolitical" were coded as a 0. These two items were averaged for a mean extremity index. This is very similar to how attitude strength researchers form measures of attitude extremity (Wegener, Downing, Krosnick, & Petty, 1995). This two-item index showed good internal consistency, $r(1696) = .51$, $p < .001$.

Political ideology (covariate). Conservative, relative to liberal, political beliefs have been associated with life satisfaction and other measures of well-being (e.g., Napier & Jost, 2008), although there is significant debate over the robustness of this association (e.g., Onraet, Van Hiel, & Dhont, 2013; Wojcik, Hovasapian, Graham, Motyl, & Ditto, 2015). To rule out effects of conservative political beliefs, we created a measure of overall political ideology. The two questions used to create the measure of political extremity was also be used to calculate the measure of political ideology, with higher scores indicating greater conservatism relative to liberalism. For this index, responses are coded from 1 ("Extremely Liberal/Strongly Democrat") to 7 ("Extremely Conservative/Strongly Republican"). "Don't Know/Apolitical" responses were recoded to the middle of the party affiliation item for this index. This two-item index had very good internal consistency, $r(1696) = .76$, $p < .001$, and so the items were averaged together.

[5] A third item asked what candidate the participant would support in the election. We chose not to analyze or interpret this item since we are interested in only the extremity and ideology and people's political identities.

Moderators.

Social media use index. The 11-item Social Media Scale was comprised of items adapted from the 27-item Perceived Usefulness of Facebook scale (Yang & Brown, 2015) and the 20-item Facebook Activities scale (Yang & Brown, 2013). This adaptation measures how much participants use social media (e.g., Facebook, Instagram, Twitter, etc.) for a variety of purposes, and includes three sub-scales: maintaining existing connections, making new connections, and information. The first five items (maintaining existing connections) were adapted from the maintaining social connections factor of the Perceived Usefulness scale, the next four items (making new connections) were adapted from the relationship formation factor of the Facebook Activities scale. Two other items were added to assess information seeking and sharing. The responses to this questionnaire were arranged as a 5-point Likert-type scale from "Never" (0) to "A lot" (4). The scale achieved high internal consistency, with Cronbach's $\alpha = .88$. Because the construct of interest is a gauge of social media use overall, the average for all items was calculated.

Perceived social support index. This index was calculated as the average of responses to the 12-item Perceived Social Support scale (Zimet, Dahlem, Zimet, & Farley, 1988). This scale asked participants to indicate the amount of social support they perceive from friends, family, and significant others on a 7-point Likert-type scale, with higher scores indicating greater social support. This scale also has 3 sub-scales related to the source of the support: Significant Other, Family, Friends. The full scale achieved high internal consistency, with Cronbach's $\alpha = .91$.

Outcomes.

***Health somatic symptom index*.** Somatic symptoms were measured by 13 items from the somatic symptom scale of the Patient Health Questionnaire[6] (PHQ-15; Kroenke, Spitzer, Williams, & Löwe, 2010). This scale asked how much participants were bothered (1 "not at all" to 3 "a lot") by specific symptoms in the previous four weeks. The scale has good criterion validity, and correlates with functional impairment, disability, and health care use (Kroenke, et al., 2010). The scale had good internal consistency, with Cronbach's $\alpha = .83$. The scores of all items were averaged for an overall index of somatic symptom intensity.

Perceived stress index. The survey included a 10-item scale of perceived stress, adapted from Cohen et al. (1983). This scale measured how much the participant had been affected by various stressors in the prior month on a 4-point Likert-type scale from "never" (0) to "fairly often (4). The scale has shown good reliability and predictive validity. It is highly correlated with physical symptoms ($r = .52–.70$), depressive symptoms ($r = .65–.76$), and health service utilization ($r = .17–.20$) in college students (Cohen et al., 1983). The scale showed high internal consistency, with Cronbach's $\alpha = .86$. Scores for each item were averaged for an index of perceived stress, with higher scores indicating greater perceived stress.

***Subjective well-being index*.** Subjective well-being (SWB) was measured using the five-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The items represent statements (e.g., "I am satisfied with my life") with a 7-point Likert-type scale anchored with "strongly disagree" and "strongly agree." The scale demonstrated high internal consistency, with Cronbach's $\alpha = .87$. The five items were averaged for a measure of SWB, with higher scores representing greater well-being.

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[6] Two items from the original form of the PHQ were not included in the survey: "Menstrual cramps or other problems with your periods," and "Pain or problems during sexual intercourse."

Belonging Need index. Another measure of well-being was measured with an 11-item scale, including the 10-item Need to Belong scale (Leary, Kelly, Cottrell, & Schreindorfer, 2013). This 10-item scale measures the desire for acceptance and belonging, using a 5-point Likert-type scale with higher scores indicating greater need to belong. It is important to note that Need to Belong is a measure of the (trait) desire to be accepted and belong, not a measure of the (state) feeling of belonging. An additional item was included in this survey to tap state belonging, asking participants to respond to the prompt "I feel like I belong" on a 5-point scale anchored with "Not at all" and "Very much." The 11 items were averaged together for an index of belongingness, and higher scores on the belongingness index indicate *lower* levels of well-being (consistent with the need to belong). The scale had good internal consistency, with Cronbach's $\alpha = .82$.

Results

Our analysis plan was pre-registered on the OSF site (see https://osf.io/rnd9r/register/565fb3678c5e4a66b5582f67). Any deviations from this plan are noted in the results and discussion as "exploratory." Descriptive statistics and bivariate correlations for all variables of interest are presented in Table 1. Although not part of our pre-registered analysis plan, these data are presented for exploratory purposes.

Pre-registered Analysis Plan

The data for this study are multilevel because individual participants are nested within samples. The pre-registered analysis plan aimed to account for the nested structure of the data by using multilevel models, estimated in R with the lme4 (Bates, Maechler, Bolker, & Walker, 2015) and lmerTest (Kuznetsova, Brockhoff, & Christensen, 2016) packages and including random effects for both the intercepts and the slopes. Because there are no agreed upon effect

sizes for multilevel models, we rescaled all variables to range from 0 to 1. This makes the unstandardized coefficients directly interpretable as the percent difference on the outcome variable in a continuum from 0 to 1 on the predictor variable (e.g., a b = .20 is a 20% difference). Political extremity was not centered because the zero point (not extreme) is a meaningful value. Political ideology was midpoint centered because the midpoint is a meaningful value (i.e. moderate). The moderator variables (social media use and social support) were group-mean centered.

Testing Hypothesis 1

Hypothesis 1 predicted that political extremity would be associated with more stress and less well-being during the election. To test the hypothesis, we estimated four multilevel models with political extremity as our main predictor of the four outcome variables, while controlling for political ideology. The coefficients from these four models are plotted in Figure 1 (for all models the precise coefficients are in the supplemental materials on the OSF). It is evident that the hypothesis was not supported. Although political extremity was significantly associated with more stress, as expected, it was also significantly associated with greater SWB, contrary to expectations. It was not significantly associated with somatic symptoms or belongingness.

Although not the focus of our hypotheses, there were some associations between political ideology and the outcome variables. Specifically, conservatives appeared to express higher levels of subjective well-being and lower levels of somatic symptoms than did liberals. This is consistent with work finding a happiness gap between liberals and conservatives (e.g., Napier & Jost, 2008).

For exploratory purposes, we also tested if gender was a moderator of the effect of political extremity on our four outcome variables.[7] See the supplemental materials for full model results. Gender did not moderate the effect of extremity on stress or subjective well-being. It did moderate the association of extremity on belongingness (men: b = .11, SE = .04, p = .006; women: b = .03, SE = .02, p = .32) and somatic symptoms (men: b = .08, SE = .04, p = .04; women: b = -.06, SE = .02, p = .02). In other words, men who are more politically extreme experience greater need to belong and also more somatic symptoms, indicating lower well-being; more politically extreme women do not experience greater need to belong and also lower somatic symptoms, indicating greater well-being. Thus, political extremity negatively affects the well-being of men but not women.

Testing Hypothesis 2

Hypothesis 2 predicted that the association between political extremity and stress and (lower) well-being would be moderated by social media use, such that the association between extremity and stress/well-being would be stronger with more social media use. To test this hypothesis, we re-estimated the four models above, but included social media use and its interaction with political extremity as predictors. The coefficients from these four models are plotted in Figure 2. It is evident that the hypothesis was not supported; all of the interactions were not different from zero.

Testing Hypothesis 3

[7] We did not test if gender was a moderator for the other hypotheses because of the relatively low number of men in the sample (n = 390) and the high dimensional interactions required to test gender as a moderator for the other hypotheses.

Hypothesis 3 predicted that social support would buffer the effects of extremity and social media use on the four outcome variables. That is, that there would be a three-way interaction between political extremity, social media use, and social support. To test this hypothesis, we re-estimated the four models above, but included social support and its interaction with political extremity and social media use as predictors. Notably, we needed to deviate from our original analysis plan for these analyses. The inclusion of all of the random slopes for the predictors made for complex models that did not converge. After trying alternative optimizer algorithms, we opted for simplified models with fewer random effects. We started by removing the random slope for the three-way interaction and re-estimated the model, removing additional random slopes for two-way interactions until the model successfully converged. In the end, the model for somatic symptoms only included the random slopes for political extremity, political ideology, social media use, and social support; the model for stress only included the random slopes for political extremity, political ideology, social media use, social support, and the social media-political extremity interaction; the model for belongingness only included the random slopes for political extremity, political ideology, social media use, social support, the social media-political extremity interaction, and the social support-political extremity interaction; and the model for SWB only included the random slopes for political extremity and political ideology.

The coefficients from these four models are plotted in Figure 3. It is evident that the hypothesis was not supported for somatic symptoms, stress, and belongingness; all of these interactions were not different from zero. There is a significant interaction when predicting SWB. At high levels of social support, the interaction between extremity and social media use is not significant (b = .16, SE = .12, p = .19), but at low levels of social support the interaction

between extremity and social media use is negative and significant (b = -.25, SE = .11, p = .03). Probing this latter interaction further, when social media use is high (+1SD), political extremity is unrelated to SWB (b = -.05, SE = .04, p = .21). When social media use is low (-1SD), political extremity is marginally associated with more SWB (b = .05, SE = .03, p = .10). That is, when social support is lacking and people use lower levels of social media, then political extremity has a small, statistically noisy positive association with SWB. This pattern is not supportive of our hypothesis. Notably, across all of the three-way interactions, the confidence intervals are very wide, which does not allow us to make precise conclusions about the size of these effects.

Discussion

We reasoned that the hostile and divisive political rhetoric on social media during the 2016 U.S. presidential election would negatively affect the health and well-being of emerging adults who strongly identified with political parties and ideologies (i.e., political extremity, after controlling for political ideology), especially those who were heavy users of social media, and that these effects would be moderated by social support. We found that although more politically extreme emerging adults experienced more stress than those less politically extreme, they did not experience differences in belongingness or somatic symptoms.[8] We also found that more politically extreme emerging adults in our sample during the election experienced greater SWB, not lesser SWB as we expected. Apparently these politically extreme emerging adults were able

[8] An exception to this general trend was found in an exploratory analysis of gender's interactive effects: Men (less than one-fourth of our sample) with greater political extremity experienced lower levels of well-being as measured by somatic symptoms and belongingness.

to effectively manage the increased stress so that it did not manifest itself in somatic symptoms. This effective stress management may have resulted in increased feelings of SWB.

Alternatively, these politically extreme emerging adults may have felt good about themselves politically during this extreme election, and thus managed stress more effectively because of this increased SWB. This alternative aligns with broader social psychological theory, specifically Social Identity Theory (e.g., Tajfel, 1978; Tajfel & Turner, 2004). The emerging adults in our sample who had greater political extremity may have benefited from the psychological resources of political group membership, and these benefits may have manifested in greater SWB, especially in the face of divisive rhetoric during the election. These positive associations between political extremity and SWB are also consistent with existing literature (e.g., Curini, Jou, & Memoli, 2012).

We also reasoned that social support might attenuate these negative effects on health and well-being, but we found that social support only attenuated the effect of extremity on somatic symptoms, not stress, belongingness, or SWB. We further found that social support moderated the joint effect of political extremity and social media use on SWB, specifically that ideological extremists who use less social media and have less social support tend to have somewhat greater SWB. None of the other outcome variables (i.e., somatic symptoms, stress, belongingness) were predicted by the interaction effect. We caution readers against conclusive inferences about the nature of these interactive effects on SWB because the confidence intervals are wide.

Our exploratory bivariate correlation analysis (Table 1) showed that the strongest relationships were as might be predicted by literature on stress and health: SWB was positively correlated with social support (r = .50) and negatively correlated with somatic symptoms (r = -.34) and stress (r = -.57). Stress was positively correlated with somatic symptoms (r = .45) and

negatively correlated with social support (r = -.28). Belongingness was correlated with greater social media use (r = .32) and stress (r = .28). Taken together, these exploratory results indicate that during the election, those emerging adults with greater social support (potentially through social media use) tended to have lower stress and fewer somatic symptoms, and enjoyed greater SWB. Notably, political extremity was only weakly associated with belongingness (r = .10), and stress (r = .06).

Although the pre-registered hypotheses in the present study were generally not supported by the data, the results of our planned and exploratory analyses provide some interesting evidence for further research and analysis.

Alternatives and Suggestions for Future Research

The present research does not provide empirical evidence that the divisive social media landscape during the 2016 U.S. presidential election was associated with negative well-being outcomes in emerging adults. Instead, our results suggest a *complex* relationship between social media use and well-being during the election, such that social media use was *positively* correlated with indicators of greater well-being (i.e., SWB and perceived social support and also positively correlated with indicators of lesser well-being (i.e., belongingness, perceived stress, and somatic symptoms). This might mean that other unaccounted factors may have been at play. For example, our study did not distinguish between active social media use, where an individual creates content or communicates with others, and passive social media use, where an individual simply consumes content created by others (e.g., Burke, Marlow, & Lento, 2010). In a recent review of the literature linking social media use and well-being, Verduyn, Ybarra, Résibois, Jonides, and Kross (2017) note the importance of this distinction: Whereas passive social media use is consistently negatively associated with SWB, active social media use is positively

associated with SWB. Thus, participants in our sample may have been engaging with their social media in more active ways, resulting in greater SWB and perceived social support. Moving forward in the study of social media use and well-being, then, researchers should be prepared to embrace the complexity of this relationship and look for new ways of quantifying the nuances associated with social media engagement.

Another potential influence on an individual's experience of online political discord is social network diversity: The degree to which social relations cut "across the boundaries of homogeneous social groups" (Son & Lin, 2012, p. 601). Specifically in regard to political discussion, social network diversity has been shown to be related to both increased political engagement (Lake & Huckfeldt, 1998) and lower political participation (Mutz, 2002). In the context of the present research, we might predict that social network diversity would be an important moderator of the effects that online interactions about politics might have on well-being, but the direction of the moderating effect is uncertain. We did not have a measure of social network diversity in the present data, but future researchers should consider this as an important variable in understanding the effects of online political interactions on well-being.

Similarly, we suspect that political engagement may be a variable of interest because more politically engaged individuals may be more strongly affected by political discourse. The EAMMi-2 dataset did not include a measure of political engagement, something that should be included in future studies of political attitudes and behaviors in relation to social media use. However, we believe our results account somewhat for political engagement because people who score high on measures of political extremity also score high on measures of political knowledge and engagement (Kinder & Kalmoe, 2017).

One alternative hypothesis for any association between political extremity and well-being is that political moderates may be more distressed than political extremists by the divisive rhetoric displayed by their social media "friends." This viewpoint is bolstered by evidence that conflicting political viewpoints in one's environment, "social network ambivalence," increased the time it took for political moderates to make a voting decision, but not for political extremists (Nir, 2005, p. 425), indicating that moderates may have felt more conflicted. Also, those with more moderate attitudes toward a topic showed more anxiety than those with more extreme attitudes when opinions of others were divided (a "dissensus effect"; Simons & Green, 2016, p. 2). Thus, political moderates may experience more stress than political extremists in the face of divisive rhetoric. However, we are skeptical of this proposal in the present research because our multilevel model analyses showed political extremity predicted somatic symptoms or belongingness only for men, and extremity showed only a small, nonsignificant prediction of perceived stress ($b = .02$). Similarly, the exploratory correlation analysis showed small positive or no correlations between political extremity and these variables (see Table 1). A dissensus effect would show a negative correlation between political extremity and these variables.

Our proposal that users on social media would be exposed to more hostile rhetoric on social media as a product of the election's divisive rhetoric has a reverse alternative: The hostile rhetoric of the election was present as a product of social media's relatively greater influence in this election than in past elections. An ideal way to explore this might be to compare the 2016 election with 2012 presidential election data, because social media was a prominent part of both elections. We did not test this alternative hypothesis in the present study because data similar to the EAMMi2 were not collected during the 2012 election, but researchers interested in this might use the political attitudes, mindfulness, SWB, and political information seeking data from the

2004 presidential election, collected as part of the original EAMMI project (see https://osf.io/4acrm/ for a description of the variables measured in the 2004 EAMMI project). In 2004, social media would not have been present to the extent it was in 2016, and so a comparison between these two election years could disentangle some of the effects of social media present in the current dataset, but still would have researchers wondering about the possible interactive effects of social media and the 2016 election's hostile political dynamics.

Caveats and Limitations

One reason we may have failed to find an association between the predictors and our measure of belongingness is that that our measure of belongingness is dominated by items tapping into the extent to which individuals have a *need* to belong at a trait level. It is likely that any effects relevant to the election will primarily have an effect on *feelings* of belonging at a state (or current) level. Although a feeling of belonging is a fundamental need (Baumeister & Leary, 1995), trait-level measures of one's need to belong do not capture fulfillment of this need, which is what is commonly represented in models of well-being (e.g., Keyes, 2002). Thus, a more accurate representation of feelings of belonging—as an indicator of well-being—would have focused exclusively on fulfilled feelings of belonging.

As a reviewer noted, another related issue to the measurement of political attitudes is whether or not extremism, as indexed in our study, captures the right kind of extremism necessary to show the predicted effects. Perhaps it is extremity in comparison to local contexts, or extremity in terms of political behaviors (e.g., violent protesting) that would be the most likely to show such effect. Such potential differences between types of extremity have not been tested in the extremity literature, to our knowledge, and understanding these differences would be an

interesting addition to the literature. However, the measure used in this study is consistent with past work on extremity and psychological phenomenon (e.g., Brandt, Evans, & Crawford, 2015).

It is important to reiterate that the results presented here are limited in their generalizability; the results are from data provided by young people in the emerging adulthood age range (18-29), and among that specific group, the participants were largely college or university students. Although we believed that emerging adults would be the age group most likely to be affected by divisive political discourse due to their heavy social media use, it is also possible that their heavy social media use and access to social media from a young age has desensitized them to such disagreement within their social networks. Thus, although emerging adults are the age group most likely to be formalizing their own political beliefs, they are also—of voting-age Americans—the age group to have had access to social media for the greatest proportion of their lives. The effect of divisive rhetoric via social media may be attenuated for this age group. Researchers interested in other age groups and non-academic populations may find different effects than the present research.

Conclusion

Despite the divisive and hostile political discourse that played out on social media during the 2016 U.S. presidential election, the health of emerging adults was not negatively affected by their political extremity, and any effects were not moderated by social media use or social support. To the contrary, there may have been some positive effects on SWB for those with greater extremity. However, we do not believe that the present research is the definitive exploration of the topic. Our pre-registered analysis plan did not specify some important analyses or alternative hypotheses, and so we encourage other researchers to use the open data and materials (see https://osf.io/sujpt/) to construct novel explorations of this topic. We also hope that

future research can consider some of the other important variables and hypotheses that we propose in our discussion. The present research and future studies can help elucidate what effects, if any, political extremity, social media, and social support have on the political considerations, health, and well-being of emerging adults in coming elections.

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Table 1.

Descriptive Statistics and Bivariate Correlations for All Study Variables

	N	*M* (*SD*)	Min.	Max.	1	2	3	4	5	6	7
1. Political extremity	1698	1.31 (0.87)	0.00	3.00	--						
2. Political ideology	1698	3.51 (1.48)	1.00	7.00	-.29**	--					
3. Social media use	1704	3.14 (0.79)	1.00	5.00	.03	.02	--				
4. Perceived social support	1702	5.53 (1.12)	1.00	7.00	.03	.09**	.25**	--			
5. Somatic symptoms	1699	1.62 (0.39)	1.00	3.00	.004	-.10**	.07**	-.17**	--		
6. Perceived stress	1696	3.06 (0.68)	1.00	5.00	.06*	-.14**	.08**	-.28**	.45**	--	
7. Subjective well-being	1704	4.50 (1.34)	1.00	7.00	.001	.21**	.12**	.50**	-.34**	-.57**	--
8. Belongingness	1704	3.38 (.68)	1.36	5.00	.10**	-.04	.32**	.13**	.16**	.28**	-.09**

Note. Higher scores on political ideology are associated with more conservative relative to liberal beliefs. *$p < .05$; **$p < .01$

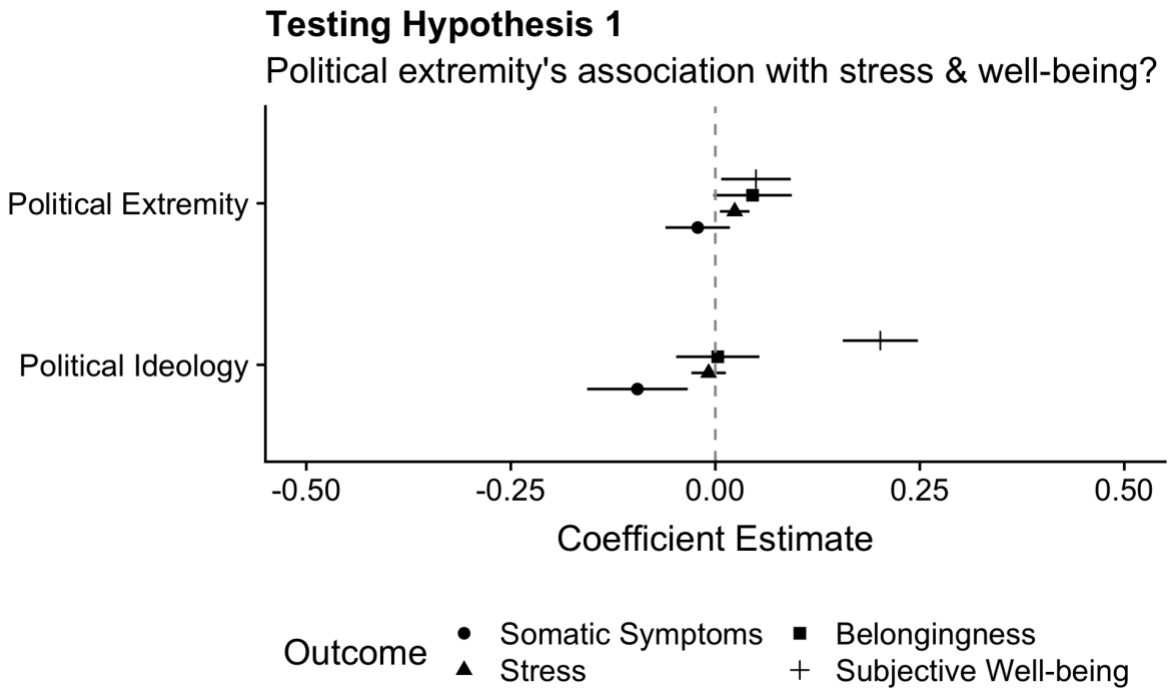

Figure 1. Coefficient estimates of political extremity (primary predictor) and political ideology (covariate) on the four outcome variables estimated with multilevel models. Error bars are 95% confidence intervals. Higher scores on political ideology are associated with more conservative relative to liberal beliefs. Higher scores on belongingness represent more need to belong.

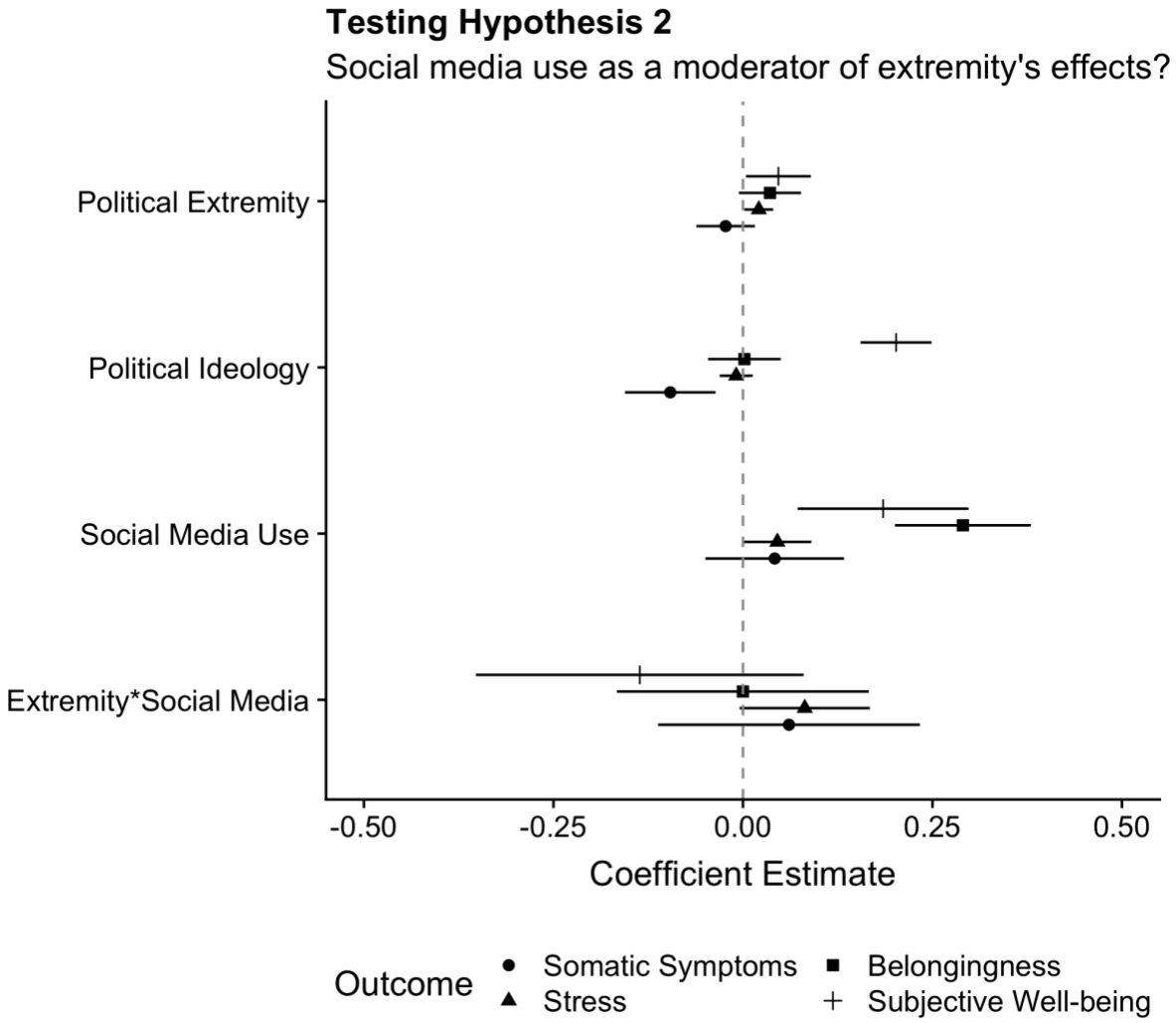

Figure 2. Coefficient estimates of political extremity (primary predictor), social media use (moderator), and political ideology (covariate), on the four outcome variables estimated with multilevel models. Error bars are 95% confidence intervals. Higher scores on political ideology are associated with more conservative relative to liberal beliefs. Higher scores on belongingness represent more need to belong.

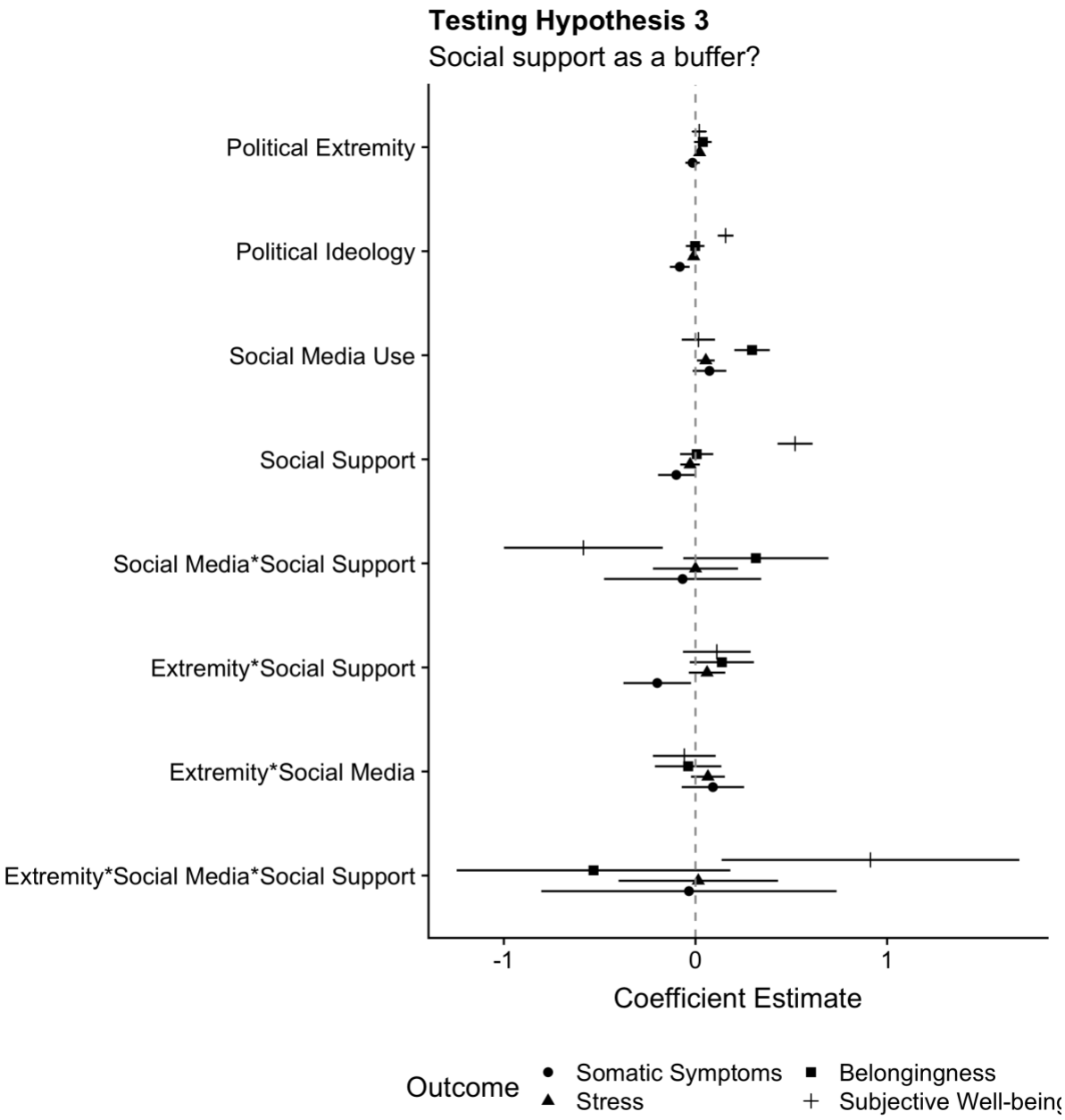

Figure 3. Coefficient estimates of political extremity (primary predictor), social media use (moderator), social support (moderator), and political ideology (covariate), on the four outcome variables estimated with multilevel models. Error bars are 95% confidence intervals. Higher scores on political ideology are associated with more conservative relative to liberal beliefs. Higher scores on belongingness represent more need to belong.